

Create Public Value Through Broadband



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November 27th, 2008

Predicting the Future is Difficult



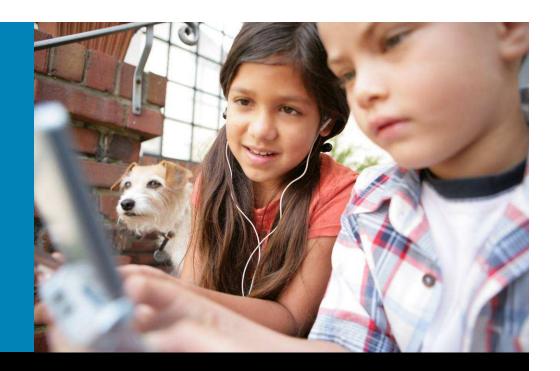
- "Prediction is very difficult, especially about the future." Niels Bohr, Nobel Laureate
- "There is no reason anyone would want a computer in their home." Ken Olson, founder of Digital Equipment Corporation
- "Who wants to hear actors talk?"
 H.M. Warner, cofounder of Warner Brothers, 1927
- "The wireless music box [radio] has no imaginable commercial value." Said to David Sarnoff, founder of NBC
- "This 'telephone'... is inherently of no value to us." Western Union memo, 1876

What is Broadband?

European Commission Definition:

Broadband refers to a wide range of technologies that have been developed to support the delivery of innovative interactive services, equipped with an always-on functionality, providing local bandwidth and capacity that evolves over time, and allowing the simultaneous use of both voice, video and data services.

Source: eEurope 2005



The Service Provider Perspective

"Readiness" Is Improving

From 1995

To 2010

70M Internet Users 1.8 B Internet Users

1M Broadband Subscribers 500M Broadband Subscribers

200M Mobile Subscribers 2.3B Mobile Subscribers

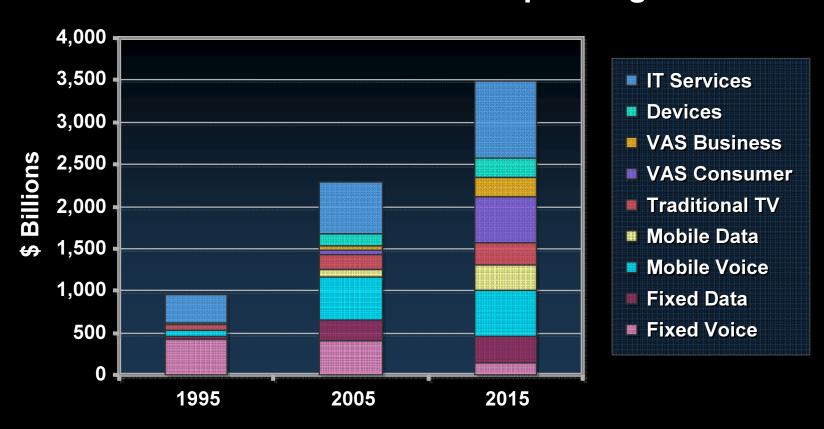
50 PB/Month IP Traffic 8 EB/Month IP Traffic

\$22B Spend in E-Commerce \$800B Spend in E-Commerce

Sources: Ovum, Gartner, Jupiter, PWC, e-Marketer, JP Morgan, Cisco IBSG Analysis

Growth and Value Migration

Worldwide End-User Spending



Source: Cisco IBSG Analysis, March 2006; Ovum, January, August 2005; Gartner Dataquest, September 2000 - December 2005; PWC, June 2005; JP Morgan, January 2006; Infonetics, November 2005; In-Stat STB Forecast, January, June 2006



The Public Sector Perspective

Broadband Government: Evolution

Connectivity **Upgrades** Services and Scaling **Efficiency Public Administration Mainly National, National** and National and Regional and Cities Rural International Development Content / Services focus **Economic Access focus** Backbone focus Phase 1 Phase 2 Phase 3

Broadband Public Sector Raymond Versteegh

Social inclusion

Trend: Public Sector and Broadband

Players involved in FTTH Segmentation June 2005		
Incumbents	9	7.8%
Municipalities / Power Utilities	78	67,2%
Alternative operators / ISPs	13	11,2%
Housing companies & Other	16	13,8%

Source: IDATE study / FTTH Council Europe



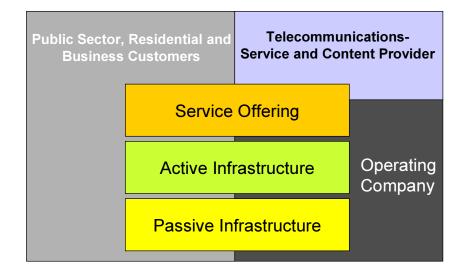
Broadband Manifesto

TeleCities is the Knowledge Society Forum of Eurocities, the network for local governments of more than 120 large cities in over 30 European countries. Telecities actively contributes to implementation of the i2010 agenda, applying broadband and ICT in cities.

TeleCities embraces high speed secure networks as an engine of economic and social urban development. Members share know-how about proven models of broadband deployment and stimulate the development of broadband services. Based on practical experience and a coherent vision, the cities participating in TeleCities with this manifesto present ten building blocks for a broadband policy.

Generic Broadband Business Model

The Broadband City 2010 main concept building blocks



Source: The Broadband City Roadmap for Local Government Executives, Cisco Systems, Internet Business Solutions Group, Jan 2005

Next Generation Broadband 7 Key Learnings

- 1. The policy debate has to evolve into a more complex discussion about the relationship between infrastructure, the quality of connectedness between people and within communities and new applications and services.
- 2. People don't access infrastructure. They access, and in most cases pay for, services they value.
- 3. Connecting people and businesses and communities with fast, secure and increasingly robust communications networks is turning out to be a key to rising service quality, community strengthening and new opportunities for economic growth and resilience.

Next Generation Broadband 7 Key Learnings (continued)

- 4. Avoid building "single use/service" networks, e.g. voice or Internet only, or single service provider solutions. The new networks must support multiple service types and multiple service providers.
- 5. It is difficult to deliver the indispensable attributes of robust networking security, resilience, quality of service etc if they haven't been factored into the design of the networks from the start.
- 6. It is vital that multiple communications service providers can use the common access infrastructure to compete in the provision of telecommunications services.
- 7. The focus now is as much on applications and services as it does on the design and delivery of better connectivity.

Broadband Government Cisco's Thought Leadership

Cisco Sponsorship

FTTH Council Europe
Broadband Cities 2006
eLeaders Forum
Broadband Government Think Tank

Connected Series
Cities

Health

Schools

Homes

Republic

Government

Broadband City

2010

2010

Broadband City A Roadmap for Local Government Executives



Thought Leaders

Essays from urban Innovators Edited by Simon Willis

The ideas explored in this book chart the emergence of a political and economic phenomenon – the city as the new connected republic of the 21st Century. Simon Willis, Director of the European public sector team in Cisco's Internet Business Solutions Group, has collated essays that show how different cities, at the cutting edge of the process, are grappling with the various stages of connectivity.

There are striking differences between their experiences. But they also have certain things in common. They are driven by their citizens' demands for political re-engagement and for better, more responsive, more accessible city services. They are also driven by competitive forces. As they look outside their nation state boundaries to define what they are going to be in the future and how they are going to be successful in the newly emerging global environment. The successful city learns not just how to work differently

* See also notes



CITYNET

Public Orchestrated Open Access Broadband Model

* See also notes

CITYNET

" ... a big step towards the deployment of a citywide fiber-to-the-home network. This enables our city to compete with other European cities. In this way we ensure a wide open marketplace for innovative services and economic growth, as well as a fast track for the smarter and cheaper delivery of care, education and other public services."

Mark van der Horst Alderman of Economic Affairs, ICT & Infrastructure City of Amsterdam

Alternative Broadband Business Models

Equal Access

Private or Community Owned Model

Wholesale Model Dark Fiber model

Public Orchestrated Open Access

ACCESS, SERVICES & CONTENT

NETWORK (Backbone & Access)



PHYSICAL INFRASTRUCTURE (Dark Fiber)









Source: Cisco IBSG

Legend Arrow: One or Multiple Players Per Layer

Public Orchestrated Open Access Model Characteristics (generic)

- A next generation broadband infrastructure
- Equal and open access
- Organized by public communities
- Public ownership (or public private) of the physical broadband infrastructure (passive layer)
- One independent network operator
- Wholesale services on a fair and non-discriminatory basis
- Competition and innovation at the services layer
- Limit financial risk public sector by minority share public private partnership

Citynet Market Drivers

- Foster sustained economic and social benefits
- Provide True Broadband Invest in a high quality future proof communication infrastructure (is a public interest)
- Bridge The Digital Divide
- Breaking through existing vertical integrated business model
- Open access for all service providers
- Enable freedom of choice for citizens and businesses
- Stimulate innovation & knowledge economy

Citynet Roadmap

2002: Study of a Next Generation Broadband Network

Study of future proof network: Value & Benefits Interviews with incumbents

2003: Study of a Public Private Partnership

Study of public private partnership (passive layer) with a minority position of the Municipality: Possibilities & Opportunities

2004: European tenders

One party for building the physical infrastructure

One party for operating the network

Multiple parties to provide services, applications and content

2005: "On Track With Broadband"

Dutch Government issues guidelines (non binding) for community broadband to local, regional government and housing corporations, partly based on the Citynet project

2006: Start first phase: 40.000 homes by 2008 at €30m

Citynet Fibre-to-the-Home is becoming a reality

FTTx reality in Europe (Source: Idate June 2005)

650.000 FTTx subcribers

2.5m homes passed

CityNet: Major FTTH project in Europe

420.000 homes and businesses by 2013

Cost: €300m (€714 per connection)

Shift Market Order – Culture Clash

From vertical integrated triple-play services to open-access network multi-play services

Regulatory Problems Unlikely

European Commissions focuses on stimulating competitiveness

32 European countries => deployment independent fiber-optic networks to boost economic development and social inclusion

Citynet **Public Orchestrated Open Access Model**

ACCESS, SERVICES AND CONTENT



Multiple Content & **Service Providers**

NETWORK (Backbone and Access)



BBned (Telecom Italia)

PHYSICAL INFRASTRUCTURE (Dark Fiber)



Glasvezelnet (Fibernet) **Amsterdam** BV

5 Housing **Corporations**

(33,3 %)

Municipality Amsterdam

(33,3 %)

ING Real Estate (33,3 %)

Citynet Rationale

- Innovative and freely accessible infrastructure
- Support growth in demand next 30 years and beyond
- Open marketplace for innovative service providers
- Increase economic development
- Fast track for smarter & cheaper care, education and other public services
- Encourages content creation and more exchange of information
- Bypass of three major issues
 - Continued demand for faster broadband connectivity
 - The bottleneck in the local loop
 - Overcoming short-term view of current infrastructure owners to invest in network upgrades

Citynet Regulatory & Competition Framework

- Amsterdam City Council very careful to abide Market Economy Investors Principle: Citynet is No State Aid!
- Risk/Reward acceptable for all shareholders involved
- Permission for housing corporations to invest in new infrastructure by Dutch Ministry of Public Housing
- The network will be operated using the 'open network' principles

SP's purchase transport on non-discriminatory conditions Telco's can use the network to offer their own services

Citynet Do The Financials Stack Up?

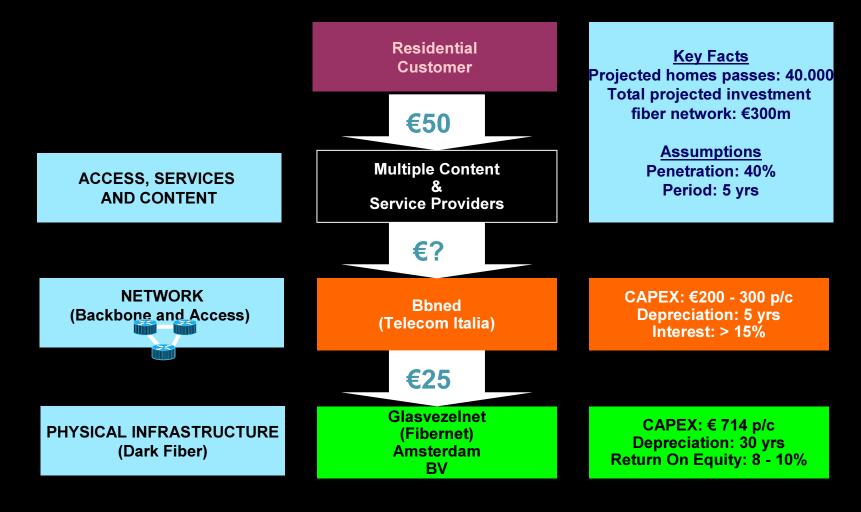
Key determinants viability investment

- Long term view stakeholders
- Fiber investment is akin to real estate
- Estimated return on equity: 8 10%

Key drivers of the value

- Subscriber take-up (penetration)
- Revenue generated per subscriber (ARPU)
- Churn

Citynet Pricing & Investment Model



Q and A

